REMARKS

In the outstanding Official Action, Claims 1-20 were rejected under 35 USC §112, second paragraph. Specifically, the terminology "finished" organic compound was objected to. Moreover, Claims 1-20 were rejected over United States Patent No. 3,214,347 to *Grekel et al.* as anticipated or, alternatively, as obvious over the '347 patent.

Claims 10-13 are cancelled without prejudice. Claims 1-9 and 14-20 are maintained; however, these claims have been amended to delete the objected-to language and further differentiate the art.

Also submitted herewith is a *Declaration Under 37 CFR §1.132 of Kenneth A. Windhorst* as to unexpected, superior results achieved in accordance with the invention.

As amended and, especially in view of the enclosed *Declaration* as to unexpected results, this application is believed in condition for allowance.

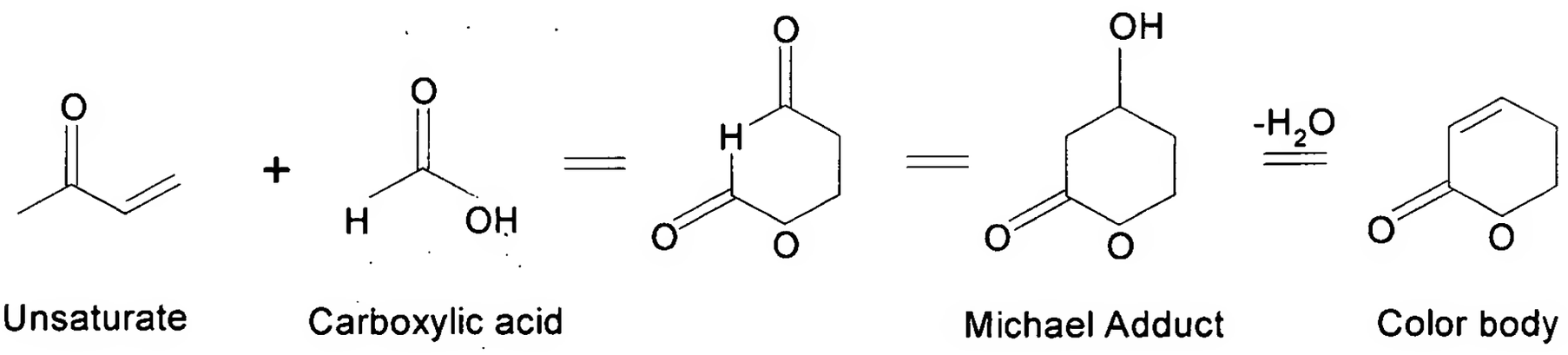
The claims have been amended to specifically exclude transient compositions which may be formed in a column such as disclosed in *Grekel et al.* '374. In particular, the addition of water has been specified to be such that a mixed solution having a consistent concentration of water is formed and that aqueous composition formed in this process has the claimed attributes. Support appears in the application as filed, page 5, lines 23-29:

> In a first embodiment, the stable color values of the organic compounds are improved by combining a small amount of water with the product organic compounds. In one embodiment, the water is added directly to the finished organic compound product under conditions of agitation, such as stirring. In another embodiment, the water may be conveniently added by simply adding the water to an empty mixing vessel and then adding the organic compound to the vessel. The addition of the organic compound will typically provide sufficient mixing energy to form a mixed solution having a consistent concentration of water.

The amendments to the claims differentiate over the cited art and are believed to put this application in condition for allowance. Ken Windhorst points out that because water/organic compound mixtures of *Grekel et al.* '347 are in a distillation column, compositions vary with height and cannot have a "consistent concentration of water" as is claimed. Moreover, *Grekel et al.* '347 teaches away from the invention in that it teaches anhydrous products. Furthermore, the compounds which are believed to cause color problems do not azeotrope with water in any event, so that the *Grekel et al.* '347 process would be ineffective to produce the claimed results. It is still further noted in the *Declaration* that water is used in many production processes in earlier processing steps but such use is ineffective to stabilize the finished product.

As is also noted by Ken Windhorst, it is an unexpected and very useful superior result that commercial products' color can be stabilized and enhanced simply by adding relatively low levels of water. Without intending to be bound by theory, it is believed that the addition of water prevents the formation of color bodies by dehydration. *Note* page 9 of the application as filed, line 3 and following:

> It is believed that a compound formed from an unsaturated ketone and a carboxylic acid in the production of the relevant organic compounds leads to formation of a Michael Adduct in accordance with the following reaction process:



Unsaturate Carboxylic acid Michael Adduct Color body

As seen from this reaction process, the Michael adduct, upon dehydration, yields color bodies thought to lead to the undesirable darker color products. It is believed that by adding water to the organic compound products, formation of the color bodies is prevented.

Moreover, the results are unexpected and dramatic. *See* Examples 5-7, line 17+ of the application as filed, reproduced below:

> Examples 5-7
>
> The effect of color improvement though the addition of water was determined on three samples from a commercially produced butyric acid run. The samples were prepared by successive distillations of the same portion of the commercially produced butyric acid run. The APHA colors of the samples were determined to be as follows:
>
> Example 5 13
> Example 6 3
> Example 7 1
>
> The color variance of the samples is attributable to the fact that more color bodies were present in the first distillation sample as compared to the second and third distillation samples.
>
> To each of these samples was added 20,000 ppm, water while stirring at room temperature, to ensure uniform distribution of the water. Following addition of the water, the APHA colors of the samples were determined as follows:
>
> Example 5 1
> Example 6 1
> Example 7 1

Note in Examples 5 and 6, color is improved substantially while Example 7 is color stable.

Counsel *notes* that none of the art of record, notably the *Grekel et al.* '347 reference, does not disclose, teach or suggest adding water so that a stabilized, consistent composition contains from 100 ppm to 50,000 ppm water as is claimed in this case. Indeed, the reference teaches away, specifying "dry acid" at Col. 2, line 59:

> The point in the column at which the make-up water is added is immaterial as long as it is not introduced at a level so low in the column that it will interfere with the production of ***substantially dry acid*** at the base of the column.

as well as Col. 7, line 69:

> To obtain highly purified n-butyric acid from ***the dry acid mixture*** mentioned immediately above, said mixture is fed to a third column operated at a bottoms temperature of 157.8°C. (635 mm.) and at a top tower temperature of 138.9°C. (500 mm.).

It is also noted that the '347 *Grekel et al.* patent is concerned with *separation*, while the present invention is not. Thus, the '347 reference does not remotely suggest the present invention and indeed teaches away from the claimed invention as discussed above.

In any event, patentability is supported by unexpected, superior results. *In re Soni* is *apropos* (34 USPQ2d 1684, 1687 and following (CAFC 1995):

> Mere improvement in properties does not always suffice to show unexpected results. In our view, however, when an applicant demonstrates substantially improved results, as Soni did here, and states that the results were unexpected, this should suffice to establish unexpected results in the absence of evidence to the contrary. Soni, who owed the PTO a duty of candor, made such a showing here. The PTO has not provided any persuasive basis to question Soni's comparative data and assertion that the demonstrated results were unexpected. Thus, we are persuaded that the Board's finding that Soni did not establish unexpected results is clearly erroneous.
>
> The cases cited by the dissent are not to the contrary. Neither De Blauwe, nor Wood, nor Lindner requires a showing of unexpectedness separate from a showing of significant differences in result. Nor does Merck, which involved compositions understood to differ only in "a matter of degree." Those are not the facts here, where substantially improved properties were shown. Given a presumption of similar properties for similar compositions, substantially improved properties are ipso facto unexpected. The difficulty postulated by the dissent in distinguishing substantial from insubstantial improvement is no greater than the PTO and the courts have encountered, successfully, for many years in making judgments on the question of obviousness. It is not unworkable; it is simply the stuff of adjudication. Nor does it change established burdens of proof. The PTO here established a prima facie case, the applicant responded to it with a showing of data, and the PTO made an inadequate challenge to the adequacy of that showing.

In view of the above amendments and Remarks and the enclosed *Declaration Under 37 CFR §1.132 of Kenneth A. Windhorst*, this application is believed in condition

for allowance. This response is believed timely. If an extension becomes necessary, please consider this paper a *Petition* therefor and charge our Deposit Account No 50-0935.

Respectfully submitted,

Michael W. Ferrell
Reg. No. 31,158

Ferrells, PLLC
P.O. Box 312
Clifton, Virginia 20124-1706
Telephone: 703-968-8600
Facsimile: 703-968-5500
August 9, 2006